ENGINEERING CHANGE PROPOSAL (SHORT FORM)

(See MIL-STD-481 for instructions)

DATE *(YYYYMMDD)* 20040429

Form Approved OMB No. 0704-0188

PROCURING ACTIVITY NUMBER **N/A**

1. ORIGINATOR NAME AND ADDRESS
Kase J. Saylor
Southwest Research Institute
6220 Culebra Rd. Bldg. 189
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2. CONTRACT NUMBER AND LINE ITEM

3. PROCURING CONTRACTING OFFICER
CODE | TEL

4. TITLE OF CHANGE
Superscript 'D' in LEAR formula in Attachment I, Note 2.

5. ECP NUMBER	REV	AMEND	6. CAGE CODE	7. CLASS OF ECP	8. JUST.CODE	9.PRIORITY
MCC 2004						

10. SPECIFICATIONS AFFECTED

CAGE CODE	SPECIFICATION / DOCUMENT NO.	REV
	PMT 90-S002	I

11. DRAWINGS AFFECTED

CAGE CODE	NUMBER	REV

12. CONFIGURATION ITEM NOMENCLATURE / TYPE DESIGNATION / WEAPON SYSTEM CODE
N/A

13. IN PRODUCTION
☐ **YES** ☐ **NO**

14. LOWEST ASSEMBLY AFFECTED

NOMENCLATURE	PART NO.	NSN
N/A		

15. DESCRIPTION OF CHANGE (Attach a document showing [a] existing document paragraph, figure, or table and [b] modified document paragraph, figure, or table with the change incorporated).
Superscript 'D' in LEAR formula in Attachment I, Note 2.

16. NEED FOR CHANGE
Change needed to properly represent LEAR formula.

17. EFFECT ON ASSOCIATED EQUIPMENT

18. PRODUCTION EFFECTIVITY BY SERIAL NUMBER

19. EFFECT ON PRODUCTION DELIVERY SCHEDULE

20.RECOMMENDED RETROFIT EFFECTIVITY

21. ESTIMATED KIT DELIVERY SCHEDULE

22. ESTIMATED COST/SAVINGS

23. SUBMITTING ACTIVITY AUTHORIZING SIGNATURE
Kase Saylor Signed 11/8/2004

23.a. TITLE
Engineer, SWRI

24. APPROVAL/DISAPPROVAL a. RECOMMENDED [X] APPROVAL [ ] DISAPPROVAL

b. APPROVAL	c. GOVERNMENT ACTIVITY	SIGNATURE	DATE *(YYYYMMDD)*
[X] APPROVED [ ] DISAPPROVED	PEOSTRI 12350 Research Parkway Orlando, FL 32826-3276	Perry R. Smith, LTC AD PMLTS	*20041108*
d. APPROVAL	e. GOVERNMENT ACTIVITY	SIGNATURE	DATE *(YYYYMMDD)*
[ ] APPROVED [ ] DISAPPROVED			

DD FORM 1693, AUG 96 (EG) PREVIOUS EDITION MAY BE USED. Designed using Microsoft Word, Dec 99

15a. Existing document paragraph, figure, or table.

Note 2: Direct Fire Weapon Lethality Effects Assessment Routine:
When a MILES Decoder successfully decodes two (2) Hit Words within an eight (8) Hit Word transmission time interval, it initiates a Lethality Effects Assessment Routine (LEAR) to assess the lethality effects status of the host target based on the decode incident.
There is a range dependency inherent in this implementation. At close ranges, the Decoder can, with high probability of success, decode four (4) pairs of Hit Words out of a received eight (8) Hit Word sequence. The Decoder will initiate the LEAR four times in this case. At long range, due to the lower probability of a successful reception of the transmitted Hit Word signal by the MILES Target System, the Decoder may successfully decoded fewer than four (4) pairs of Hit Words. It probably will initiate the LEAR less than four times.
Since the LEAR is entered more than once, and with high probability, four (4) times at close range, the actual probability for each execution of the LEAR must be set less than the desired single weapon ammunition engagement close range lethality effect status Kill Probability. (One Kill lethality effect status assessment outcome from the multiple LEAR executions is sufficient to kill the target.) The equation relating the two probabilities is:
Pk = 1-(1 - PW)D
Where Pk = Kill Probability given all Hit Words were received and successfully decoded (close range condition).
PW = Kill Probability given a single pair of Hit Words were received and successfully decoded.
D = Number of executions of the LEAR given perfect reception and decode.

15b. Modified document paragraph, figure, or table with the change incorporated.

Note 2: Direct Fire Weapon Lethality Effects Assessment Routine:
When a MILES Decoder successfully decodes two (2) Hit Words within an eight (8) Hit Word transmission time interval, it initiates a Lethality Effects Assessment Routine (LEAR) to assess the lethality effects status of the host target based on the decode incident.
There is a range dependency inherent in this implementation. At close ranges, the Decoder can, with high probability of success, decode four (4) pairs of Hit Words out of a received eight (8) Hit Word sequence. The Decoder will initiate the LEAR four times in this case. At long range, due to the lower probability of a successful reception of the transmitted Hit Word signal by the MILES Target System, the Decoder may successfully decoded fewer than four (4) pairs of Hit Words. It probably will initiate the LEAR less than four times.
Since the LEAR is entered more than once, and with high probability, four (4) times at close range, the actual probability for each execution of the LEAR must be set less than the desired single weapon ammunition engagement close range lethality effect status Kill Probability. (One Kill lethality effect status assessment outcome from the multiple LEAR executions is sufficient to kill the target.) The equation relating the two probabilities is:
$P_K = 1-(1 - P_W)^D$
$P_W=1-(1-P_K)^{1/D}$
Where P_K = Kill Probability given all Hit Words were received and successfully decoded (close range condition).
P_W = Kill Probability given a single pair of Hit Words were received and successfully decoded.
D = Number of executions of the LEAR given perfect reception and decode.